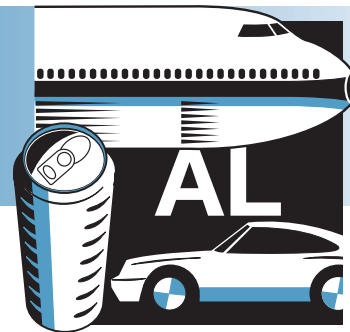


# Project Fact Sheet



# TECHNOLOGY FOR CONVERTING SPENT POTLINER (SPL) TO USEFUL GLASS FIBER PRODUCTS

## BENEFITS

- Potential to eliminate the treatment and landfilling of up to 100,000 metric tons of SPL annually in the U.S.
- Potential for over one trillion Btus of energy savings in the U.S. aluminum and fiberglass manufacturing industries
- Reduced SPL disposal cost in excess of \$20 million annually for the U.S. aluminum industry

## APPLICATIONS

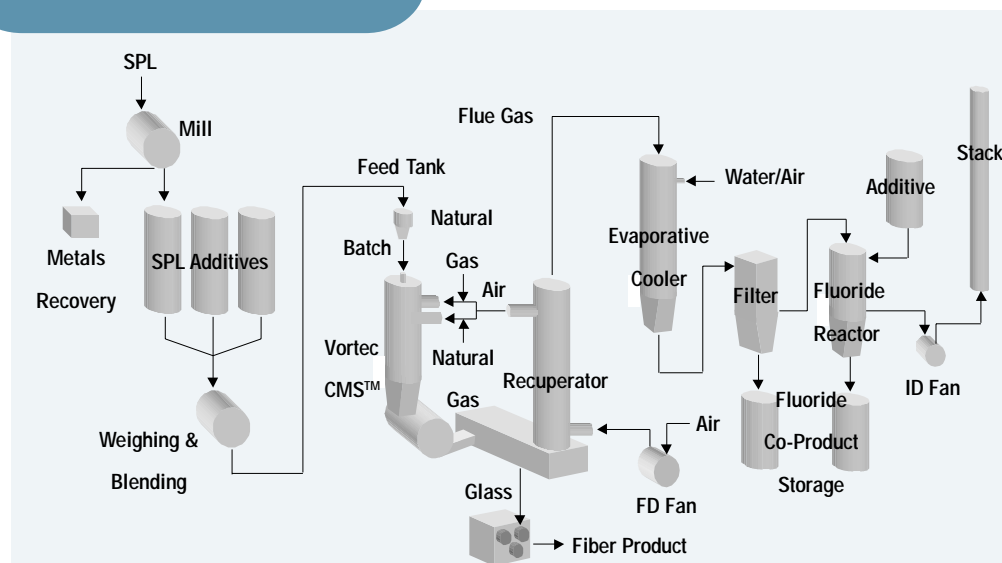
The successful completion of this project and the subsequent commercial implementation of the CMS™ will provide the U.S. aluminum industry with a technology to produce commercial quality glass fiber and aluminum fluoride products from SPL.

## RECYCLING OF WASTE PRODUCTS WILL PRODUCE VALUE-ADDED PRODUCTS

U.S. Aluminum smelters produce up to 100,000 tons of SPL annually, which could cost an estimated \$33 million for treatment and landfill disposal; while nine hundred billion British thermal units (Btu) of natural gas are consumed annually for SPL treatment alone.

Vortec Corporation, in cooperation with Alcoa Incorporated/Alcoa-Mt. Holly, Hoogovens Technical Services, Inc., CertainTeed Corporation, and the New York State College of Ceramics at Alfred University, will perform a pilot-scale experimental testing project to evaluate the feasibility of converting SPL from aluminum smelting plants to commercial quality glass fiber and aluminum fluoride products using Vortec's Cyclone Melting System (CMS™) and wheel fiberizing technology. The CMS™ is a patented, fossil fuel-fired, suspension heating and melting technology developed for rapid and efficient glass melting and industrial waste vitrification. SPL contains many of the chemical oxides typically used in the manufacture of glass products. Adjusting the concentration of these oxides by blending the SPL with raw materials and heating the feedstock materials in suspension with reaction gases in the CMS™, provides the potential for tailoring glass compositions as may be needed for making specific commercial products.

## VORTEC INTEGRATED SPL RECYCLING SYSTEM



**Vortec CMS™ process for conversion of SPL to useful glass fiber products.**



## Project Description

**Goals:** Provide the U.S. aluminum industry with a cost-effective means of converting its SPL waste to commercial quality glass fiber products and recover high value fluorides, which are research priorities identified in the *Aluminum Industry Technology Roadmap*.

The project, initiated in September 1997, will be performed during a 24-month period and will include the following activities:

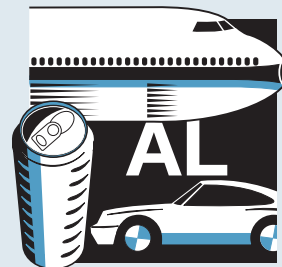
1. Design, fabrication, and installation of pilot-scale glass fiberizing and flue gas filtration and analysis equipment into Vortec's existing pilot-scale CMS™ testing facility;
2. Pilot-scale SPL vitrification test to produce glass fibers from feedstock containing greater than or equal to 40 percent of SPL;
3. Testing and analysis of fibers from the pilot-scale test with respect to commercial quality specifications;
4. Testing and analysis of fibers with respect to fiber respiratory effects in humans;
5. Sampling and analysis of flue gas from the pilot-scale CMS™ to remove sodium fluoride (NaF) to less than or equal to 0.05 grains per standard cubic feet per minute (scfm); and,
6. Preliminary design of a commercial-scale air pollution system for aluminum fluoride production.

## Progress and Milestones

- Design and installation of all pilot-scale components have been completed.
- Vitrification and fiberizing trials have been initiated.
- Pilot-scale testing of the system is currently being conducted.
- Glass fiber qualification testing has been initiated and is expected to be completed by Spring/Summer 1999.

## Commercialization Plan

Vortec Corporation has formed strategic alliances with organizations with complimentary abilities to build and operate recycling facilities to service the aluminum industry.



### PROJECT PARTNERS

Alcoa Incorporated  
Alcoa-Mt. Holly  
Goose Creek, SC

CertainTeed Corporation  
Valley Forge, PA

Hoogovens Technical Services, Inc.  
Ontario, Canada

New York State College of Ceramics  
at Alfred University  
Alfred, NY

Vortec Corporation  
Collegeville, PA

### FOR ADDITIONAL INFORMATION, PLEASE CONTACT:

Ramesh Jain  
Office of Industrial Technologies  
Phone: (202) 586-2381  
Fax: (202) 586-1658  
ramesh.jain@ee.doe.gov  
<http://www.oit.doe.gov/IOF/aluminum>

Please send any comments,  
questions, or suggestions to  
[webmaster.oit@ee.doe.gov](mailto:webmaster.oit@ee.doe.gov).

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Office of Industrial Technologies  
Energy Efficiency  
and Renewable Energy  
U.S. Department of Energy  
Washington, D.C. 20585



January 1999